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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,506	03/30/2004	William A. Whittenberger	555-08	3247

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EXAMINER

LEO, LEONARD R

ART UNIT	PAPER NUMBER
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3753

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,506

Applicant(s)

WHITTENBERGER ET AL.

Examiner

Leonard R. Leo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-16, 18-23, 25-37 and 39-42 is/are rejected.
- 7) ☒ Claim(s) 9, 17, 24, 38 and 43 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/04</u> . | 6) <input type="checkbox"/> Other: ____. |

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DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25, 39 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Leonard et al. The applied sealant 35 is capable of being molded prior to curing.

Claims 25, 39 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Zebuhr (Figures 5-6). The applied sealant is molded into top and bottom members 50.

Claims 25, 27, 39 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Temple (Figure 3, column 2, lines 37-42). Regarding claim 27, Temple discloses holes 56. The applied sealant is molded into pans 52.

Claims 25, 39 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Sjogren et al (Figure 1, column 4, lines 63-66). Side walls 50, 52 are applied by heating and molding into the ends of the corrugated strip 10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al, Zebuhr, Temple or Sjogren et al.

Leonard et al, Zebuhr, Temple or Sjogren et al discloses all the claimed limitations except simultaneously sealing the ends.

To perform steps simultaneously to minimize manufacture time requires only routine skill in the art.

Claims 1, 3, 5-6, 10, 12-14, 18, 20-21, 26, 29-30 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al in view of Davis.

Leonard et al discloses all the claimed limitations except a plurality of pieces of corrugated material. Leonard et al (column 2, lines 40-43) discloses manifolds 10, 12 have “outer walls 28, 28a to grip the convolutions of the heat transfer wall for both fluid tight sealing and holding the convolutions in position.”

Davis (Figure 10) discloses a heat exchanger comprising a corrugated strip 60 with a plurality of pieces of corrugated material 62 for the purpose of providing increased residence time to improve heat exchange.

Since Leonard et al and Davis are both from the same field of endeavor and/or analogous art, the purpose disclosed by Davis would have been recognized in the pertinent art of Leonard et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Leonard et al a plurality of pieces of corrugated material for the purpose of providing increased residence time to improve heat exchange as recognized by Davis.

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Regarding claims 5, 13, 20 and 30, the sealant 35 of Leonard et al is moldable prior to final curing.

Regarding claim 6, 14 and 21, Davis (column 4, lines 20-26 and column 5, lines 6-18) discloses the corrugated strip is composed of polystyrene and the pieces of corrugated material are composed of polystyrene.

Regarding claim 29, Figure 8 of Davis discloses corrugated walls 36 on the corrugated strip 30.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al in view of Temple.

The device of Leonard et al lacks a plurality of holes.

Temple discloses a heat exchanger comprising a corrugated strip 14 having ends with sealant 55 disposed in a plurality of holes 56 for the purpose of enhancing the sealant bond (Figure 3, column 2, lines 37-42).

Since Leonard et al and Temple are both from the same field of endeavor and/or analogous art, the purpose disclosed by Temple would have been recognized in the pertinent art of Leonard et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Leonard et al a plurality of holes for the purpose of enhancing the sealant bond as recognized by Temple.

Claims 28 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al in view of Noll et al.

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The device of Leonard et al lacks the sealant matching the coefficient of thermal expansion.

Noll et al discloses a heat exchanger comprising a stack of plates 4 having ends with sealant 15 matching the coefficient of thermal expansion thereof for the purpose of minimizing damage to the heat exchanger (column 4, lines 33-38).

Since Leonard et al and Noll et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Noll et al would have been recognized in the pertinent art of Leonard et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Leonard et al a sealant matching the coefficient of thermal expansion thereof for the purpose of minimizing damage to the heat exchanger as recognized by Noll et al.

Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al in view of Davis as applied to claims 1, 3, 5-6, 10, 12-14, 18, 20-21, 26, 29-30 and 32-35 above, and further in view of Pentikainen.

The combined teachings of Leonard et al and Davis lack straight corrugations on the corrugated strip.

Pentikainen discloses a heat exchanger comprising a stack defining alternating passages for two fluids having a plurality of plates 2, each plate 2 having corrugations 3 oriented perpendicular to corrugations 3 of the adjacent plate 2 for the purpose of increasing turbulence to improve heat exchange.

Since Leonard et al and Pentikainen are both from the same field of endeavor and/or analogous art, the purpose disclosed by Pentikainen would have been recognized in the pertinent art of Leonard et al.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Leonard et al corrugations oriented perpendicular to corrugations of the adjacent plate for the purpose of increasing turbulence to improve heat exchange as recognized by Pentikainen. The plates of Pentikainen oriented in the same direction are analogous to the corrugated strip, while the alternating plates are analogous to the pieces of corrugated material. In the device of the combination of Leonard et al and Davis, the corrugated strip is further modified to have straight corrugations as taught by Pentikainen, since Davis teaches employing the pieces of corrugated material.

Claims 4 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al in view of Davis as applied to claims 1, 3, 5-6, 10, 12-14, 18, 20-21, 26, 29-30 and 32-35 above, and further in view of Forster et al.

The combined teachings of Leonard et al and Davis lack a centrally located duct attachment.

Forster et al discloses a heat exchanger comprising a corrugated strip 1 and a pair of duct attachments 7', 8' on each side of the stack and a centrally located duct attachment 7, 8 for the purpose of compensating heat stresses.

Since Leonard et al and Forster et al are both from the same field of endeavor and/or analogous art, the purpose disclosed by Forster et al would have been recognized in the pertinent art of Leonard et al.

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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Leonard et al a centrally located duct attachment for the purpose of compensating heat stresses as recognized by Forster et al.

Claims 7, 15, 22 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al in view of Davis as applied to claims 1, 3, 5-6, 10, 12-14, 18, 20-21, 26, 29-30 and 32-35 above, and further in view of Temple, as applied to claim 27 above.

Claims 8, 16, 23, 31 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leonard et al in view of Davis as applied to claims 1, 3, 5-6, 10, 12-14, 18, 20-21, 26, 29-30 and 32-35 above, and further in view of Noll et al as applied to claims 28 and 42 above.

Allowable Subject Matter

Claims 9, 17, 24, 38 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

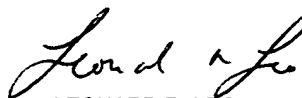
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard R. Leo whose telephone number is (571) 272-4916. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571) 272-4929. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


LEONARD R. LEO
PRIMARY EXAMINER
ART UNIT 3753

June 23, 2006